Keeping Our Options Open: Another Possibility for Heavy Force Deployments

by Captain John S. Wilson

Recent remarks by the Army Chief of Staff and Vice Chief of Staff have no doubt sent shock waves through the mechanized community. I had to read three different articles on the subject to ensure Gen. Shinseki had not been misunderstood or misquoted. It is true: the General has called for the replacement of ALL tracked vehicles in the Army inventory, to include the King of the Killing Zone, the Abrams MBT.[1]

The reason for Gen. Shinseki's radical approach is our seeming inability to move our present heavy forces into a contested territory in a timely fashion, and the inability of our light forces to take and hold ground effectively against better equipped mechanized forces. The Army was embarrassed by its irrelevance during the Kosovo crisis as a direct result of our "inability" to get significantly heavy forces into the region in a timely manner.[2] Indeed, many of the articles in *ARMOR* magazine since the fall of the Iron Curtain have debated this issue at length. The Chief of Staff has seemingly put an end to this debate by his vision to replace all tracked armored vehicles with lighter, cheaper wheeled armored vehicles. While I applaud Gen. Shinseki's decisiveness to tackle the problem of Army deployability, we may be throwing the proverbial baby out with the bath water. There are other suitable alternatives, which demand closer scrutiny. I will focus on one alternative in this article: Lighter-than-air transportation.

Benefits of Light Armored Wheeled Vehicles. The introduction of some light armored vehicles to the current mix of Army weapons would be a benefit to the force.

Shorter Logistics Tail. Wheeled armor does have a shorter logistics tail.[3] The ability to sustain an armored force without unduly taxing lift assets is certainly a plus. Under current scenarios, roughly 90% of our strategic airlift is dedicated to logistics missions to supply the force.[4]

High Degree of Operational Mobility. Because most wheeled armored vehicles travel significantly faster and farther on roads than their tracked cousins, they possess a higher degree of operational agility. Wheeled armored forces can project quickly from one area of operations to the next along road networks.

Easier/Quicker Into Theater. Because wheeled armor is lighter than conventional tracked armor, it is much easier to airlift into a theater. Current specifications required of a new, wheeled armored vehicle include deployability by C-130 and a desire for an airdrop capacity.[5]

Limits of Light Armored Wheeled Vehicles. There are many good wheeled vehicles which can take the place of many tracked vehicles within the Army inventory. A towed 155mm howitzer can replace the M109, the High-Mobility Multipurpose Artillery Rocket System can substitute for the MLRS, and the LOSAT HMMWV-mounted AT gun, firing high velocity rockets, could serve as a direct-fire tank killer. All these systems could act as substitutes to lend power to a more agile force.[6] They should receive significant consideration. Indeed, even some wheeled assault guns, reconnaissance platforms, and infantry carriers would be beneficial additions to the current arsenal. However, there is no suitable wheeled main battle tank to substitute for the M1A2 or the AGS, and no wheeled IFV that can replace the tactical mobility and survivability of the Bradley. Wheeled vehicles should not replace all tracked vehicles. There are only a few close substitutes: the LAV 25, LAV 90, AMX 10RC, Panhard and the Vextra 105.

Limited Armor Protection. The LAV, the AMX 10RC, the Panhard, and the Vextra 105 are all classified as reconnaissance vehicles, and are not nearly as survivable as the Abrams or the AGS. The number one concern of designers during the development of the M1 was crew survivability[7] because Army leaders, based on historical analysis, realized that armies tend to lose highly trained crews much faster than they lose vehicles.[8] The WWII-era M4 Sherman tank, while cheap, agile, and easy to maintain, was outmatched by German tanks in terms of armor protection and armament.[9] Even the up-gunned, but light-skinned tank destroyers of World War II, when misused in a main battle tank role, suffered heavy crew casualties.[10] Now that the American public has become accustomed to warfare without casualties, we cannot afford to sacrifice crew survivability for strategic or operational mobility.

Limited Tactical Mobility. Even with innovations in all-terrain wheeled mobility; there is no wheeled armored vehicle with the ability to cover the same rough terrain as a tracked vehicle. Even our former adversaries realized this. By doctrine, Soviet BTR-equipped MRRs were given one BMP MRB to handle the more rugged avenues of approach while the BTR MRBs stayed mainly on road networks.[11] They even reinforced these MRRs with a tank battalion. Today, Russian IFV technology is returning to tracked IFVs such as the BTR-90. Even with the success of the LAV and the AMX 10RC during Operation Desert Storm, no wheeled armored vehicle possesses a tracked vehicle's degree of mobility. The very invention of the tank stemmed from the inadequacy of armored cars in crossing the muddy, cratered no-man's land of World War I.

Limited Firepower. The current developments in tank design are moving toward more sophisticated, heavier armor and larger guns to defeat it. Russian tank designers have recently been showing their Black Eagle, a heavy MBT capable of mounting a 140mm main gun.[12] The best that TRADOCs "Transformation Axis" can presently hope for is to mount a 90mm or 105mm main gun on an existing wheeled armored chassis.[13] This is no match for the current crop of MBTs with heavier armor and larger main guns of superior range.

Problems with Heavy Forces. Undoubtedly, the challenges that heavier tracked vehicles face are strategic mobility and massive logistics requirements.

Not Enough Fast Heavy Lift Assets. There are presently not enough heavy airlift assets to move heavy forces into a theater in significant numbers quickly enough to influence a regional conflict or meet the Chief of Staff's deployment

criteria. According to a DoD bottom-up review of strategic lift requirements, it would require 1,708 C-141 sorties and 1,275 C-17/(C-5) sorties to move one mechanized infantry division by air (See Table 2).[14] There are only 190 C-141s and about 126 C-5s in the Air Force fleet.[15] Only 120 C-17s are programmed for production up to the year 2005.[16] If every airlift asset were brought to bear, it would require weeks to mobilize the aircrews and load out the personnel and equipment. This includes the piecemeal ferrying into a staging base. Each C-141 would have to fly back and forth nine times to move its share; five to ten times each for C-5s and C-17s.

The primary method for moving heavy forces into theater is sealift. During Desert Storm, the DoD moved 72 percent of dry cargo via ships that steamed from the U.S. and 13 percent from pre-positioned equipment near the region.[17] The drawback of sealift is the amount of time required to activate, load, and transport massive quantities of men and materiel into a theater. Although an armored or mechanized division requires only about six large, medium-speed ROROs to transport, it could take weeks to move the ships to the port of embarkation, load them, and sail them to the port of debarkation. It takes an average of four days alone to load and unload a medium/large RORO.[18] Pre-positioned equipment (afloat or on land) is a helpful remedy.

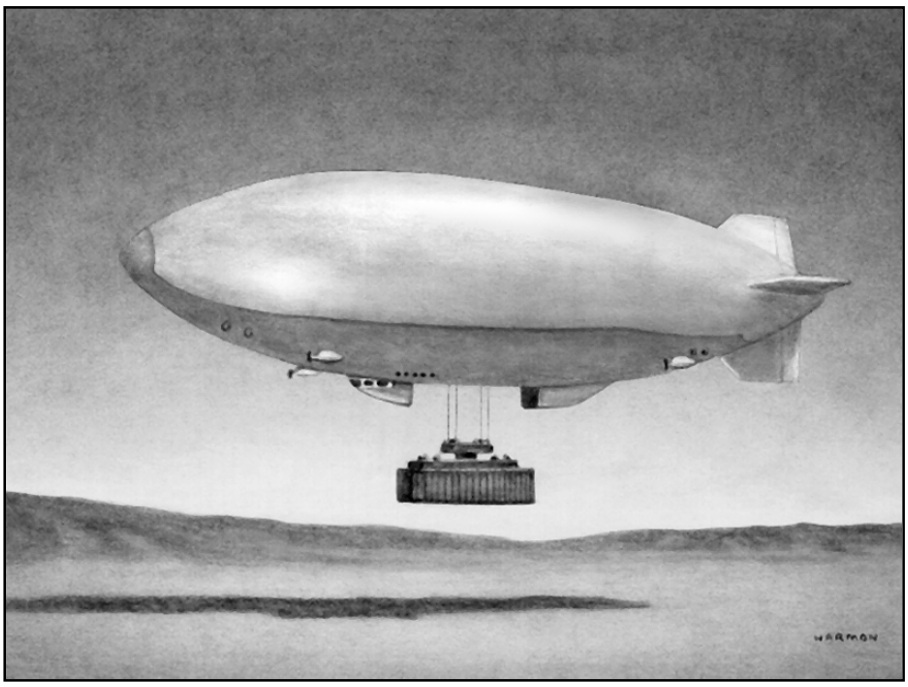
Lack of Sea and Airports. The other problem for heavy (or even medium forces) is the lack of suitable air and seaports to handle heavy lift assets. Mobility planners make the key assumption that suitable infrastructure will be available to accommodate air and sealift assets enroute and in staging areas. Even pre-positioned equipment afloat will require port facilities to unload. Closer study indicates that our potential adversaries have learned from Saddam Hussein's mistakes. To Third World troublemakers — rogue states like North Korea, Libya, Iran, or Iraq — the basic lesson of the gulf war is to stop the United States before it can get started.[19] Future adversaries are sure to rain missiles on the ports and airfields where tanks and other heavy equipment must arrive to form an invasion force.[20]

During a recent war game scenario at the War College, a resurgent Russia tried to re-conquer oil-rich states around the Caspian Sea. When the "Blue Team" tried to send in a U.S. invasion force to drive them out, the "Red Team" barraged the Army's arrival points in Turkey with chemical and biological weapons. The mauled U.S. expeditionary force had to fall back so far to get out of Russian missile range that it wound up operating from back bases in Cyprus and Crete.[21]

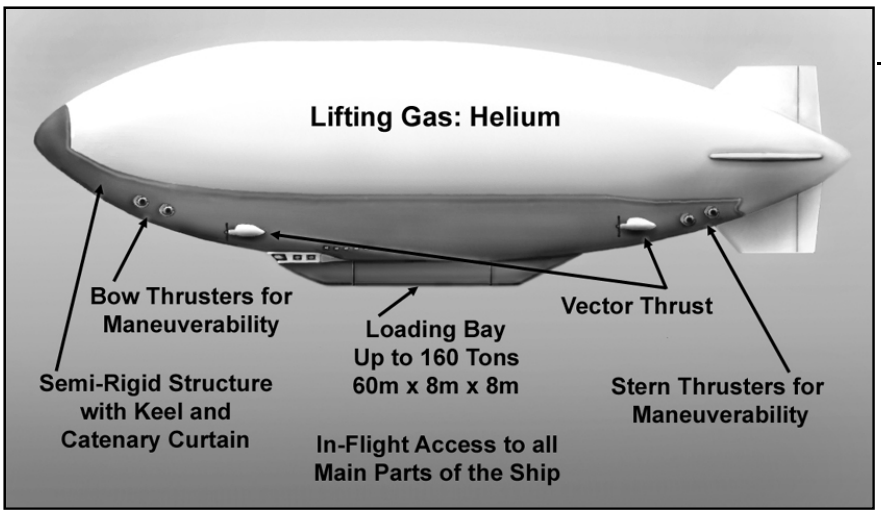
The Long Logistics Tail. The undeniable fact of heavy forces is the long, heavy logistics tail they carry with them. Fuel and ammunition rank among the heaviest commodities.[22] However, this is a worthwhile price to pay for superiority. "There is only one tactical principle which is not subject to change; it is, 'To use the means at hand to inflict the maximum amount of wounds, death, and destruction on the enemy in the minimum amount of time.'"[23] The key is to work harder and find other innovative ways to get personnel and material into a theater in a timely manner. "A pint of sweat [in this case] will save a gallon of blood."[24]

Solution to the Problem: The CargoLifter Airship. The solution to the problem lies in lighter-than-air (LTA) transportation: the airship. New innovations in LTA show great promise in heavy aerial logistics. The largest, most ambitious, and most advanced LTA logistics project is the German CargoLifter. The CL160, the first airship in the CargoLifter fleet, will be the largest airship ever flown. Measuring some 850 feet in length and 210 feet wide, the CL160 will be roughly the length of three Boeing 747s and the height of a 27-story building.[25] It will contain 15 million cubic feet of nonflammable helium, giving the airship a lifting capacity of 176 short tons (over twice the capacity of a C-17).[26] The CL160's range will be about 6,000 miles and the airship will cruise at 50-60 mph at an altitude of 5,000-6,000 feet.[27] A CL160 can cruise from the United States to Europe within 2-3 days.[28] The CargoLifter is a semi-rigid dirigible, with a fixed keel and unframed envelope.[29] The airship will operate much like an ocean-going vessel and will remain in operation most of the time since it will not have to land for routine refueling or cargo operations.[30] The CL160 will require a crew of 10-12.[31]

The Concept. CargoLifter is a skillful blend of the old and new. The project combines lighter-than-air (LTA) principles, modern crane technology and sophisticated worldwide communications to give birth to an entirely new mode of transportation.[32] The CargoLifter system will be the world's first point-to-point network, permitting the movement of extremely heavy or large payloads from a source site to final destinations almost anywhere in the world — all in one, seamless shipment. Whether long-haul trips of up to 6,000 miles, or short-haul shuttles,[33] the CargoLifter is ideally suited for the Army's heavy lift problems. CargoLifter airships do away with the need for road, bridge, and railroad repairs.[34] There is no need for large airfields or seaports, since loading and un-



CargoLifter is a proposed 850-foot-long semi-rigid dirigible. The concept is being developed by several major firms in Europe.



loading is accomplished in small areas using a patented crane-like load frame while the airship remains in the air.[35] Due to low fuel consumption, these ships will be economical to operate compared to their heavier-than-air cousins.[36] CL160s will be highly reliable because of their simplicity.[37]

Envelope. The CL160's outer "skin" will be constructed of a space-age multi-laminate material, which assures minimal helium loss while staying lightweight and durable.[38] The aerodynamic, heart-shaped profile of the CL160 is the end result of years of exhaustive design and testing.[39] Computer simulations and dynamic testing in wind tunnels and water have led to a truly innovative design, which optimizes lift and ensures high levels of fuel efficiency.[40]

Keel. With its semi-rigid design, the CL160 is more like a super-large blimp than its Zeppelin ancestors that relied on a complex inner framework for support.[41] The backbone of the CL160 is an extraordinarily light and strong polycarbon keel, which runs the length of the airship.[42] The keel supports the loading bay, load frame, main propulsion units and the flight deck.[43] The CargoLifter will be propelled by four to six fuel-efficient diesel engines.[44]

*Maneuvering Units***.** Like the space shuttle, the CL160 will rely on short bursts of energy from smaller engines for maneuvering during landings, take-offs and load exchanges.[45] Using small, powerful jet turbine engines, like those used in helicopters, these thrusters allow for additional stability and slight attitude corrections during ground operations.[46]

*Flight Deck***.** The flight deck, the airship's nerve center, will be packed with the latest avionics and navigational instrumentation.[47] It will be a hybrid between an aircraft flight deck and the bridge of a large ship.[48] The flight deck will also accommodate space for flight engineers, navigation, communications, other important in-flight functions, as well as the crew's living quarters, galley, dining area, and even recreational space.[49]

*Load Frame***.** The CargoLifter is, in a sense, a "flying crane."[50] At its heart is a uniquely designed load frame assembly that enables the airship to take on and discharge cargo while it hovers some 300 feet above the ground.[51] The load frame is designed and manufactured by one of the world's acknowledged leaders in crane technology, Liebherr.[52] The load frame is lowered from within the belly of the airship, attached to the payload, and then retracted into the cargo bay for flight.[53] Some oversize payloads may be securely affixed to the exterior underbelly of the airship by means of the load frame, similar to a helicopter sling load.[54]

*The Multi-Box***.** CargoLifter is designing a unique Multi-Box cargo carrier measuring roughly 150' x 25' x 25', which can be used in a variety of shipping situations.[55] The Multi-Box can be used to "package" a large number of pieces for shipment by the CargoLifter airship — such as for break-bulk transport — or as a self-contained unit.[56] In this latter application, the Multi-Box can house a small factory (which can be shipped intact from a manufacturing site to the field), a hospital, a maintenance facility, and a variety of other uses.[57]

*Ground Facilities***.** Unlike conventional cargo aircraft, the CL160 and its offspring will need only minimal ground support and, hence, no airports.[58] There are three sorts of CargoLifter facilities planned. The first, and largest, is a Home Base (HB), encompassing some 1,500 unobstructed acres, which will include a hangar, up to two mooring masts, and buildings/infrastructure to support construction and maintenance of up to four airships at a time.[59] The Operating Base (OB) will consist of a cleared area and a mooring mast for ground operations.[60] CargoLifter Load Exchange Zones (LEZ), about the size of a football field, are essentially cargo pick-up and discharge sites at destinations, manufacturing plants, or ports (or a small lodgment for forward deployment).[61] Presently, Home Bases are planned for Germany (now under construction), North America, South America, Asia, the Far East, and the Pacific Rim.[62] Operating bases will be more plentiful and widely distributed globally, while LEZs, requiring almost no ground infrastructure beyond mooring points, can be located almost anywhere in the proximity of cargo staging areas.[63]

Safety. Because of its immense size, the CL160 will be virtually unaffected by normal winds and weather.[64] Although larger and slower than other, more conventional aircraft, the airship can be protected from attack enroute in much the same way that convoys are protected at sea. The CargoLifter is built of several self-contained compartments of non-flammable helium in a semi-rigid design.[65] This means there is no potential for tragic catastrophes like that of the *Hindenburg*.

A Realistic Proposition. The Heavy Lift logistics airship is not a pipe dream. The CargoLifter and other similar projects are very serious and close to fruition.[66] Unveiled at the "Transport & Logistics" trade fair in Leipzig in May 1998, "Joey" is a one-eighth-scale model of the CargoLifter CL160.[67] "Joey's" role in the CargoLifter R&D program is that of a dynamic test platform for larger airship development.[68] CargoLifter AG's first prototype (the CL160 P1) is scheduled to begin test flights in 2001, and the company expects to have an operating fleet of airships by 2004.[69] CargoLifter AG is already receiving significant interest from potential customers plagued with the problems of point-to-point heavy lift.

CargoLifter AG is partnered or affiliated with several, well-known industrial names: IBM,[70] Siemens, Praxaire, Linde, Deutsche Bank, Commerzbank, and others.[71] Even NASA is in the planning stages of developing a similar airship program.[72] Some may consider LTA an "unproven" prospect. However, even Gen. Shinseki admits a lighter, wheeled armored force will rely on new, unproven technologies to provide suitable survivability.[73] Meanwhile, the general concept of LTA has been around for most of the 20th century. Indeed, the use of airships in direct combat (even with U.S. forces) is not a new concept.

Airships as a Strategic Lift Solution for Heavy Forces. The CargoLifter is a "quick" Heavy Lift Asset. It is, of course, not as fast as standard aircraft, but each CL160 will carry twice as much cargo as the largest commercial cargo airplane, the Antonov 124.[74] It will take only 25 percent as many airship sorties to carry heavy forces into a theater as it does standard aircraft (see table below). Likewise, the CL160 will cost only $100 million per copy,[75] merely 55 percent of the cost of a C-5 or C-17! (See Table 2)

The airship, while not as fast as other airlift, is certainly faster than sealift. It would only take a few days to LTA lift a unit from right outside its own motor pool straight into the area of operations. It would take weeks to move a unit's equipment to a seaport of embarkation, load it, sail it to a staging base, unload at a seaport of debarkation, and then move the equipment into the area of operations.

If the DoD were to spend the planned $20 billion for upgrading strategic sea and airlift forces on airships,[78] they could purchase 200 CL160s. An additional $10 billion would provide enough lift to move an entire armored or mechanized brigade in one lift. No one yet has asked how much Gen. Shinseki will have to pay to replace the entire tracked fleet with wheeled vehicles. What if that money were also spent to purchase airships in lieu of turning over a perfectly usable armored fleet? To replace the current fleet of M1- and M2-series tracked vehicles alone would cost about $16 billion, not including all the support systems, spare parts, and retraining crew and maintenance personnel. That would purchase an additional 160 CargoLifter airships. Include with the purchase of an airship fleet the reduced cost to maintain it, and we get more strategic lift for the investment.

In the context of an airship deployment, each CL160 will require a LEZ the size of a football field to deploy its cargo. There is no need for air and seaports to handle CargoLifter because it does not land. Because it is not a slave to infrastructure, the airship is not nearly as vulnerable to operational weapons attacks (such as those earlier mentioned in the War College war game). Planners could pick random areas relatively close to the area of operations or in the area of operations to insert heavy forces. Given this, a mechanized "forced-entry" mission might be possible (move over, 82nd Airborne).

The inclusion of an airship fleet in the strategic lift mix will also help shorten the logistics tail for heavy forces. First, the near exclusive use of airships would free up the conventional airlift fleet to handle logistics missions, its current bread-and-butter.[79] Second, the inclusion of airships in the service support pipeline would allow U.S. forces to line haul up to 176 tons of supplies at a time directly into division and brigade support areas (DSAs/BSAs). The nature of the Multi-Box design would further allow the throughput of other CSS assets (hospitals, maintenance facilities) into theater in a short time.

A Medium/Heavy Airship Division. The development of an airship fleet could lead to new, custom MTOEs better suited to today's contingency missions. Imagine a mixed medium/heavy airship division. The new division would include an airborne brigade for forced entry to establish a lodgment wide enough to insert heavier, follow-on forces directly behind them. The division would include a medium, wheeled cavalry squadron or brigade (LAV25/LAV105) to airdrop, or LTA lift, in with or just behind the airborne force to quickly establish security for the main body. The main body, the backbone of the division, would incorporate two mechanized and/or armored brigades to begin landing within hours of the airborne and cavalry. Division and DS artillery would come in the form of lighter wheeled/towed cannon and MLRS. Add a self-deploying aviation brigade to increase the division's combat power. If staged and deployed with the proper synchronization, the entire division could easily be in theater within 96 to 120 hours after lift-off, well within the Chief of Staff's desired timeline.[80] If used to secure forward seaports and/or airports, this division could be the foot in the door for four more conventional divisions within 30 days, again meeting the Chief of Staff's deployment goals.[81] What is more, this entry force division would have far more firepower, survivability, and versatility than any wheeled armored force equal in size could promise.

Conclusion. Given the revolutionary nature of Gen. Shinseki's plans for heavy forces, it is not inconceivable to introduce such an ambitious means of strategic lift to counter the Chief of Staff's argument. While we do face many more low-intensity style conflicts, the loss of conventional combat power to fight a medium-intensity conflict is the surest way to invite a medium-intensity conflict. Just because many other rogue nations are divesting themselves of armored forces is no excuse for us to do likewise.[82] The very nature of success in warfare is to scare the enemy out of acting against you and then, once the battle is joined, never fight fair.

	Number of Vehicles per Sortie		
Model	C17	C5	CargoLifter
M1A2	1	1	2
M2A2	2	3	5
M109 Series	2	4	7
M88A1	1	1	3
Price per A/C (Mil)	$ 180.0[76]	$ 184.2[77]	$ 100.0 **55%**
Vehicle weight/volume and aircraft capacity based on TB 55-46-1			

Table 1 — Cost Comparison

Notes

[1]Sean D. Naylor, "Radical Changes: Gen. Shinseki Unveils his 21st-Century Plans," *Army Times*, Oct. 25, 1999, p. 8.

[2]Ibid, p. 8.

[3]Sean D. Naylor, "Fast and Furious," *Army Times*, November 22, 1999, p. 15.

[4]"Moving US Forces: Options for Strategic Mobility," Congressional Budget Office Report, February 1997.

[5]Sean D. Naylor, "Medium Armored Vehicle Must Have These Attributes to Ace Army's Competition," *Army Times*, November 22, 1999, p. 15.

[6]Sean D. Naylor, "Army Vision: All-Wheeled Vehicles Lead Way," *Army Times*, Oct. 25, 1999, p. 10.

[7]Orr Kelly, *King of the Killing Zone: The Story of the M1, America's Super Tank,* Berkley Books, 1989, p. 108.

[8]Ibid., p. 108.

[9]Ibid., p. 84.

[10]1LT John A. Nagl, "Tank Destroyers in WWII," *ARMOR* 91:1 (January-February 1991), p. 30.

[11]Steven J. Zaloga and James Loop, *Soviet Tanks and Combat Vehicles 1946 to the Present,* Arms and Armour Press, 1987.

[12]COL James H. Nunn and LTC John C. Paulson, "Three Tanks Featured in Russian Arms Show," *ARMOR* 99:5 (September-October 1999), p. 27.

[13]Sean D. Naylor, "Medium Armored Vehicle Must Have These Attributes to Ace Army's Competition," *Army Times*, November 22, 1999, p. 15.

[14]"Moving US Forces: Options for Strategic Mobility," Congressional Budget Office Report, February 1997.

[15]Ibid.

[16]C-17 Globemaster III, US Air Force Fact Sheet.

[17]"Moving US Forces: Options for Strategic Mobility," Congressional Budget Office Report, February 1997.

[18]*FM 55*-15, p. 5-13.

[19]John Barry and Evan Thomas, "Not Your Father's Army," *Newsweek*, November 22, 1999.

[20]Ibid.

[21]Ibid.

[22]Sean D. Naylor, "Medium Armored Vehicle Must Have These Attributes to Ace Army's Competition," *Army Times*, November 22, 1999, p. 15.

[23]Charles M. Province, *Patton's One-Minute Messages*, Presidio Press, 1995, p. 85.

[24]Ibid., 22.

[25]www.cargolifter.com.

[26-63]Ibid.

[66] "Inflated Ambitions," *FOCUS*, August 1999, pp. 14-19.

[67]www.cargolifter.com.

[68]Ibid.

[69]Ibid.

[70]"IBM to Pilot CargoLifter's IT and CAD Efforts," *CargoLifter Newsletter*, November 17, 1999.

[71]www.cargolifter.com.

[72]"Cargo Airship Among New NASA Start-Ups," www.cnn.com, August 31, 1999.

[73]Neil Baumgardner, "Shinseki: Tank's Demise Depends On Technology," *Defense Daily*, November 17, 1999.

[74]"Inflated Ambitions," *FOCUS*, August 1999, p. 19.

[75]www.cargolifter.com.

[76]C-17 Globemaster III, US Air Force Fact Sheet.

[77]C-5 Galaxy, US Air Force Fact Sheet.

[78]"Moving US Forces: Options for Strategic Mobility," Congressional Budget Office Report, February 1997.

[79]"Moving US Forces: Options for Strategic Mobility," Congressional Budget Office Report, February 1997.

[80]Gerry J. Gilmore, "Army to Develop Future Force Now, Says Shinseki," *Army News Service*, October 13, 1999.

[81]Ibid.

[82]John Barry and Evan Thomas, "Not Your Father's Army," *Newsweek,* November 22, 1999.

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Sortie Lift Comparison[2]

Notional Units (Based on 1994 MTOEs)	Number of Personnel	Unit Weight (Tons)	Airlift Sorties (C-141 / C-17 mix)		CargoLifter Sorties (Replaces C-17 only)	CargoLifter Sorties (Replaces C-141)	CargoLifter Sorties (Replaces C-17 & C-141)	% of Airship Sorties to Aircraft Sorties
Airborne Division	13,242	26,699	1,101	78	38	172	210	18%
Air Assault Division	15,840	35,860	1,412	195	95	221	316	20%
Armored Division	17,756	110,431	1,761	1,274	623	275	898	30%
Mechanized Division	17,982	109,116	1,708	1,275	624	267	891	30%
Light Infantry Division	11,036	17,092	769	41	20	120	140	17%
COSCOM	22,410	98,717	3,599	500	245	562	807	20%
Airborne Brigade[1]	4,414	8,900	367	26	13	57	70	18%
Air Assault Brigade[1]	5,280	11,953	471	65	32	74	105	20%
Armored Brigade[1]	5,919	36,810	587	425	208	92	299	30%
Mechanized Brigade[1]	5,994	36,372	569	425	208	89	297	30%
Light Infantry Brigade[1]	3,679	5,697	256	14	7	40	47	17%
						Average Percentage of Airship Sorties to Aircraft Sorties		23%

1. Assumes 1/3 of a division.

2. Personnel, Tonnage, and Aircraft Sorties based on "Moving US Forces: Options for Strategic Mobility, CBO Report, Feb 97." CargoLifter capacities based on cargo weight capacities only. CL160 will carry more volume than weight.

Table 2